**SIEMENS****PATENT**

Attorney Docket No. 2001P20554US01

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Inventor: W. Perry, JR et al. )  
Serial No.: 09/712,017 ) Group Art Unit: 2143  
Filed: November 14, 2000 ) Examiner: J. Avellino

Title **METHOD AND APPARATUS FOR AUTOMATED ASSISTANCE IN  
CONFIGURING CUSTOMER PREMISES EQUIPMENT**

Commissioner For Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**DECLARATION OF DANA BROOKS UNDER 37 CFR 1.132**

1. I, Dana Brooks, a citizen of the United States, hereby declare and state as follows:
2. I have been continuously employed by Siemens Communications, Inc, since 1998. Siemens Communications, Inc is a corporate affiliate of the Assignee Efficient Networks, Inc. I am currently a Distinguished Member of Technical Staff and have worked in software development for the telecommunications industry for 24 years.
3. I received a Bachelors of Science degree in Computer Science in 1983 from the University of Central Florida.
4. I understand that the USPTO Examiner has rejected certain claims in the above-identified application on the basis that those claims are obvious by the teaching of Romohr et al. (USPN 5,596,723) in view of Vellanki et al (USPN 5,999,979). More specifically that the Examiner equates a frame type to a virtual channel.
5. A frame is a packet of information (see also, "frame" definition 2 from <http://itmanagement.webopedia.com/TERM/F/frame.html>). In more detail, a frame is specifically used to describe the data link layer (see also, "framing in data transmissions" page 2 last paragraph of <http://www.linktionary.com/f/framing.html>). A frame type simply describes the format of the frame (see also, "framing in data transmissions" page 1 and 2 of

<http://www.linktionary.com/f/framing.html>). Rhomor discloses using frame types such as 802.2 frame types.

6. In contrast, a *channel* is a communications link, which is also known as transmission path (see also, "*channel*" definition 1 from <http://www.webopedia.com/TERM/C/channel.html>). A virtual channel is a type of channel and provides the transmission path without regard to the physical path of the transmission.

7. Based on the above, a frame or frame type would not be considered by myself as one skilled in the art or by others skilled in the art as a channel or virtual channel. Moreover, a frame or frame type would not be considered by myself as one skilled in the art or by others skilled in the art as similar to a channel or virtual channel.

8. An operating system, is a program that runs on a computer. (see also, "*operating system*" from [http://www.webopedia.com/TERM/o/operating\\_system.html](http://www.webopedia.com/TERM/o/operating_system.html)).

9. Based on the above, an operating system would not be considered by myself as one skilled in the art or by others skilled in the art as a frame, frame type, channel, or virtual channel. Moreover, an operating system would not be considered by myself as one skilled in the art or by others skilled in the art as similar to a frame, frame type, channel or virtual channel.

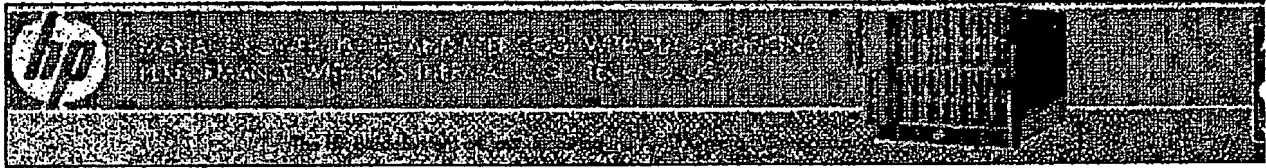
10. All statements made herein of my own knowledge are true, and all statements made of information and belief are believed true. I acknowledge that willful false statements and the like are punishable by fine, imprisonment or both, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: 6/15/07

By: 

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## frame

Last modified: Monday, January 28, 2002

(1) In graphics and desktop publishing applications, a rectangular area in which text or graphics can appear.

(2) In communications, a packet of transmitted information.

(3) In video and animation, a single image in a sequence of images. See under fps.

(4) In HTML, refers to dividing the browser display area into separate sections, each of which is really a different Web page. See under frames.

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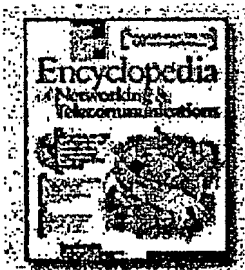
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A point-to-point connection between two computers or devices consists of a wire in which data is transmitted as a stream of bits. However, these bits must be *framed* into discernible blocks of information. Framing is a function of the data link layer. It provides a way for a sender to transmit a set of bits that are meaningful to the receiver. Ethernet, token ring, frame relay, and other data link layer technologies have their own frame structures. Frames have headers that contain information such as error-checking codes.

There are three different types of framing, each of which provides a way for the sender to tell the receiver where the block of data begins and ends:

- **Byte-oriented framing** Computer data is normally stored as alphanumeric characters that are encoded with a combination of 8 bits (1 byte). This type of framing differentiates one byte from another. It is an older style of framing that was used in the terminal/mainframe environment. Examples of byte-oriented framing include IBM's BISYNC protocol.
- **Bit-oriented framing** This type of framing allows the sender



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to transmit a long string of bits at one time. IBM's SDLC (Synchronous Data Link Control) and HDLC (High-level Data Link Control) are examples of bit-oriented protocols. Most LANs use bit-oriented framing. There is usually a maximum frame size. For example, Ethernet has a maximum frame size of 1,526 bytes. The beginning and end of a frame is signaled with a special bit sequence (01111110 for HDLC). If no data is being transmitted, this same sequence is continuously transmitted so the end systems remain synchronized.

- **Clock-based framing** In a clock-based system, a series of repetitive pulses are used to maintain a constant bit rate and keep the digital bits aligned in the data stream. SONET (Synchronous Optical Network) is a synchronous system in which all the clocks in the network are synchronized back to a master clock reference. SONET frames are then positioned within the clocked stream.

The advantage of using frames is that data is broken up into recoverable chunks that can easily be checked for corruption. A glitch in the line during the transmission will corrupt some frames. Only the lost frames and not the entire set of data needs to be retransmitted. Detecting and correcting errors is discussed under "Error Detection and Correction."

The general format for frames is a header followed by a data payload area. The frame size is usually fixed, while the data area is variable. Most data link networks use variable-size framing, which has advantages (more efficient use of the network) and disadvantages (unpredictable traffic flows and the inability to provide quality of service).

An Ethernet frame (IEEE 802.3), as pictured in Figure F-16, can hold up to 1,500 bytes of data. Note that the frame includes header and trailer bytes along with the encapsulated data. The information in the header adds overhead in the form of additional data that must be transmitted.

ANCHOR HERE: Figure 16 (see book)

The preamble contains a set of bits that help the sender and receiver synchronize their transmissions. The Ethernet bit pattern is 10101010, which produces a 10-MHz square wave clocking signal for 5.6 microseconds. The SFD (start frame delimiter) indicates the actual start of the frame. The destination and source addresses are self-explanatory. The LEN (length) field indicates the length of the data portion of the frame. PAD (padding) is used for fill-in bits. CRC (cyclic redundancy checksum) is used for error checking.

Framing is specific to the data link layer. Upper-layer protocols also divide data into discernible "packets" of information, but the terminology used to define packets at each layer is different, as outlined next. Note that these descriptions assume the Internet protocol suite.

- **Message** The actual application data, command, or instruction specified by the user or application. A message is encapsulated within a TCP segment assuming TCP is used.
- **Segment** The packet of information exchanged between two connected systems (peers) that contains transport layer protocol information. TCP exchanges segments. Segments encapsulate upper-layer messages.
- **Datagram** The packet of information that is exchanged between two connected systems that contains network layer protocol information. IP exchanges datagrams. Datagrams encapsulate segments.
- **Frame** The packet of information at the data link layer with a layout that is specific to the protocol in use. Frames encapsulate datagrams.

Figure F-17 illustrates how data is passed down the protocol stack and encapsulated by the protocols at each layer. The TCP/IP protocol is illustrated in this example. At the transport layer, TCP encapsulates upper-layer data and adds its own header to create a segment. At the network layer, IP encapsulates the segment and its own header into a datagram. Finally, the data link layer encapsulates the datagram into a frame or frames. Note that datagrams may be fragmented and placed into multiple frames. Refer to "[Network Architecture](#)" and "[Fragmentation and Reassembly](#)" for more information.

ANCHOR HERE: Figure 17 (see book)

Framing is handled by the underlying network protocols and equipment. Ethernet, token ring, frame relay, ATM, and other data link technologies use their own framing standards (ATM frames are actually called "cells" and are a fixed size). Upper-layer protocols are generally designed to interface with any of these protocols and framing methods. When building a network application, you generally don't need to care about which underlying LAN will be used, as long as you ensure the application is compatible with a network protocol suite like TCP/IP.

Note that frames are confined to specific network segments. An internetwork consists of multiple data link segments, as pictured in Figure F-18. One segment may be Ethernet while another is token ring. The connecting bridge or router must remove the encapsulated data from the frames it receives and reencapsulate the data into the frame type of the next network. In some cases, the next network might require a smaller frame size, so the device might need to fragment the data before encapsulating it into frames. Note that once data is fragmented, it travels that way all the way to the final destination.

ANCHOR HERE: Figure 18 (see book)

Alteon has proposed expanding the Ethernet frame size from its 1,500-byte size to a "jumbo frames" size of 9,000 bytes. The company claims that jumbo frames can provide a 300-percent increase in throughput for Gigabit Ethernet networks by reducing the number of frames that must be processed. Alteon believes that the 9,000-byte size (and not a larger size) is a good balance between efficiency and the processing

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## channel

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(1) A transmission path.

(2) A set of properties that distinguishes one channel from another. For example, TV channels refer to particular frequencies at which radio waves are transmitted. IRC channels refer to specific discussions.

(3) In sales and marketing, the way in which a vendor communicates with and sells products to consumers.

(4) In a field-effect transistor, such as a MOSFE T, a channel is the semiconductor path on which current flows.

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(5) For IBM PS/2 computers, a channel is the same as an expansion bus.

(6) In audio and sound terms channel refers to an individual discrete audio track. When referring to more than two channels it is called multichannel.

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Operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.

For large systems, the operating system has even greater responsibilities and powers. It is like a traffic cop — it makes sure that different programs and users running at the same time do not interfere with each other. The operating system is also responsible for security, ensuring that unauthorized users do not access the system.

Operating systems can be classified as follows:

- **multi-user :** Allows two or more users to run programs at the same time. Some operating systems permit hundreds or even thousands of concurrent users.
- **multiprocessing :** Supports running a program on more than one CPU.
- **multitasking :** Allows more than one program to run concurrently.

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- **multithreading** : Allows different parts of a single program to run concurrently.
- **real time**: Responds to input instantly. General-purpose operating systems, such as DOS and UNIX, are not real-time.

Operating systems provide a software platform on top of which other programs, called application programs, can run. The application programs must be written to run on top of a particular operating system. Your choice of operating system, therefore, determines to a great extent the applications you can run. For PCs, the most popular operating systems are DOS, OS/2, and Windows, but others are available, such as Linux.

As a user, you normally interact with the operating system through a set of commands. For example, the DOS operating system contains commands such as COPY and RENAME for copying files and changing the names of files, respectively. The commands are accepted and executed by a part of the operating system called the command processor or command line interpreter. Graphical user interfaces allow you to enter commands by pointing and clicking at objects that appear on the screen.

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